Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for assaying a drug candidate with a biosensor having one or more sensing surface-bound biomolecules associated therewith, comprising the steps of:

measuring the binding interaction between the drug candidate and the one or more sensing surface-bound biomolecules of the biosensor to obtain at least one binding interaction parameter of the drug candidate related to the binding interaction between the drug candidate and the one or more sensing surface biomolecules; and

comparing the at least one binding interaction parameter against at least one mathematical expression correlating ~~correlated from~~ binding interaction data measured for known drug compounds and known pharmocokinetic data for the ~~associated with known~~ drug compounds to determine an estimate of at least one pharmacokinetic parameter of the drug candidate.

2. (Original) The method of claim 1 wherein the at least one pharmacokinetic parameter is an absorption parameter, a distribution parameter, a metabolism parameter, or an excretion parameter.

3. (Original) The method of claim 1 wherein the at least one pharmacokinetic parameter is volume of distribution, total clearance, protein binding, tissue binding, metabolic clearance, renal clearance, hepatic clearance, biliary clearance, intestinal absorption, bioavailability, relative bioavailability, intrinsic clearance, mean residence time, maximum rate of metabolism, Michaelis-Menten constant, partitioning coefficients between

tissues and blood or plasma, fraction excreted unchanged in urine, fraction of drug systemically converted to metabolites, elimination rate constant, half-life, or secretion clearance.

4. (Original) The method of claim 3 wherein the partitioning coefficients between tissues and blood or plasma are partitioning coefficients associated with the blood brain barrier, blood placenta barrier, blood human milk partitioning, blood adipose tissue partitioning, or blood muscle partitioning.

5. (Original) The method of claim 1 wherein an estimate of at least two pharmacokinetic parameters of the drug candidate are determined.

6. (Original) The method of claim 1 further comprising determining an estimate of a solubility property of the drug candidate.

7. (Original) The method of claim 1 wherein the biosensor utilizes a mass-sensing technique.

8. (Original) The method of claim 7 wherein the mass-sensing technique involves surface plasmon resonance.

9. (Original) The method of claim 1 wherein the at least one mathematical expression correlated from binding interaction data associated with known drug compounds is a function fitted to a plurality of data points plotted on a Cartesian coordinate system.

10. (Original) The method of claim 1 wherein the plurality of sensing surface-bound biomolecules are selected from liposomes, plasma proteins, CYP 450 enzymes, metabolic enzymes, or transport proteins.

11. (Original) The method of claim 1 wherein the biosensor utilizes a sensor chip comprising:

a hydrogel coupled to the sensor surface, wherein the hydrogel has a plurality of functional groups, and wherein the one or more sensing surface-bound biomolecules are bonded to the hydrogel.

12. (Original) The method of claim 11 wherein the sensor chip further comprises:

a free electron metal that includes a sensor surface, wherein the free electron metal is selected from the group consisting of copper, silver, aluminum and gold.

13. (Original) The method of claim 12 wherein the biosensor is capable of detecting surface plasmon resonance associated with the free electron metal.

14. (Original) The method of claim 12 wherein the hydrogel is a polysaccharide or a water-swellable organic polymer.

15. (Original) The method of claim 14 wherein the polysaccharide is dextran.

16. (Original) The method of claim 11 wherein the plurality of functional groups of the hydrogel of the sensor chip include one or more of a hydroxyl, carboxyl, amino, aldehyde, carbonyl, epoxy or vinyl functional group.

17. (Original) The method of claim 11 wherein the step of measuring comprises detecting a signal associated with a reflected light beam with respect to time, wherein the reflected light beam establishes a surface plasmon resonance with the free electron metal.

18. (Original) The method of claim 17 wherein the signal associated with the reflected light beam defines a resonance curve of the surface plasmon resonance.

19. (Original) The method of claim 17 wherein the signal associated with the reflected light beam defines a reflectance minimum of the surface plasmon resonance.

20.-47. (Cancelled)